Space Weather Forecast

Issued on Friday, 18 November 2022 at 01:22 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Slight chance of Moderate flares (Minor to Moderate radio blackouts) throughout. Chance of G1 (Minor Storm) from late Day 2 (19 Nov) onwards.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity over the past 24 hours has been predominantly at Low levels, with often frequent but low level Common-class flare activity. The largest flare was a mid-level Common-class flare at 17/0928 UTC originating from a spot group that is behind the northwest limb.

There are now four numbered regions on the visible disc and one new unnumbered region. One uni-polar sunspot region in the southeast of the visible disc, is the largest region and is currently stable. The other four regions are relatively small and magnetically simple. Two of these regions are located in the southeast quadrant, one is in the northwest, and the final region continues to emerge across the northeast limb.

No Earth-directed Coronal Mass Ejections (CMEs) have been observed in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind has been predominantly Slow but with a slight upward trend through the day. Total magnetic field strength has been weak throughout, with the important north-south component fluctuating weakly. Geomagnetic activity was Quiet (Kp 0-1).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels with no solar radiation storms.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to remain generally Low during the period. There is slight but diminishing chance of isolated Moderate flares and perhaps an isolated Strong flare through Days 1 and 2 (18 and 19 Nov) emanating from two recent larger complex sunspots as they continue to rotate beyond the northwest limb. A slight chance of Moderate flares persists through Days 3 and 4 (20 and 21 Nov) due to further active sunspots which are expected to rotate onto the visible disc.

Solar Wind / Geomagnetic Activity: No significant Earth-directed CMEs are expected during the period, although some minor CME effects are possible from weak glancing blows on Day 1 (18 Nov) and Day 4 (21 Nov).

Solar winds are currently Slow and expected to remain so through Day 1. An enhancement to Slightly Elevated or Elevated levels is likely from later on Day 2 (19 Nov), persisting into Day 4

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(21 Nov) due to connection to a coronal hole as it gradually rotates into a geoeffective position. Geomagnetic activity is forecast to be predominantly Quiet through Day 1 and much of Day 2, with a chance of Unsettled periods and a slight chance of isolated Active intervals should any CME effects manifest. Later on Day 2 and throughout Days 3 and 4, Unsettled to Active levels are likely, with a chance of an isolated G1 (Minor Storm) under coronal hole influence.

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) is most likely to persist at background levels. However, there is initially a slight chance of a solar radiation storm from the two former large and complex sunspots, now located beyond the northwest limb.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	20	40	40
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	20	10	10	10
Very Active	R3 to R5 X	No	5	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	2	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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